

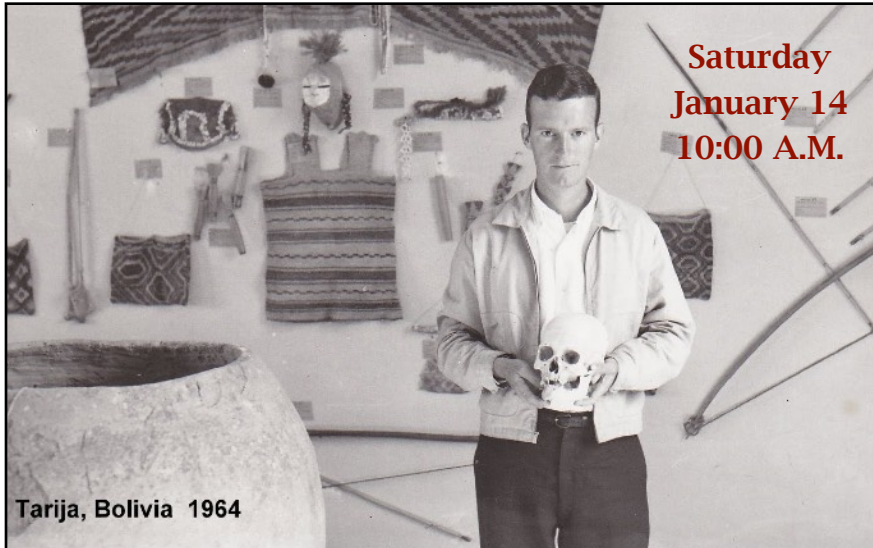


Volume 69 ◊ Number 01 ◊ January 2023 ◊ A monthly newsletter for and by the members of MAGS

January Program

James Kee

MY ADVENTURES WITH ROCKS AND RELICS IN TARIJA, BOLIVIA



Congratulations!" said the message. "You have been chosen for a Peace Corps assignment in Tarija, Bolivia."

I knew that Bolivia was a Spanish-speaking country in South America, and that was about it. I started out teaching English and working in some health projects. I soon learned that the eroded gullies around the city were loaded

with late Pleistocene vertebrate fossils—mastodons, saber-tooth tigers, armadillo ancestors the size of a car, giant ground sloths, tapirs, etc.

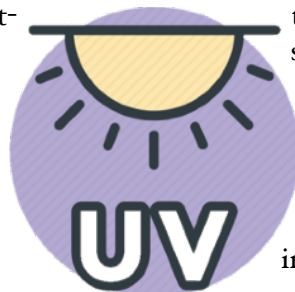
Also, the area was littered with tiny, perfectly made flint arrowheads and a variety of other artifacts of fairly recent vintage. The local natives, known as the Tomatas,

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OUR FLUORESCENT MINERAL COLLECTION

During the past year, we began collecting rocks when we stumbled into a local store and discovered Yooperlites and the store owners showed us what happens under UV. That was all it took! That triggered the need to discover any rocks and minerals we could that were fluorescent. What you see in the photos (P. 4) is



AMY NANCE

the past year's worth, with a few others not shown. For anyone curious, the box is using UV Light Strips at 365 nm, and White Light Strips at 5000°K. The box has rocks and minerals from calcite and fluorite to wernerite, tremolite, halite, kunzite, and lots in-between. We are happy to share any information we can if you're interested!

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ♦ A monthly newsletter for and by the members of MAGS

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MAGS AND FEDERATION NOTES

Memphis Archaeological and Geological Society, Memphis, Tennessee

The objectives of this society shall be as set out in the Charter of Incorporation issued by the State of Tennessee on September 29, 1958, as follows: for the purpose of promoting an active interest in the geological finds and data by scientific methods; to offer possible assistance to any archaeologist or geologist in the general area covered by the work and purposes of this society; to discourage commercialization of archaeology and work to its elimination and to assist in the younger members of the society; to publicize and create further public interest in the archaeological and geological field in the general area of the Mid-South and conduct means of displaying, publishing and conducting public forums for scientific and educational purposes.

MAGS General Membership Meetings and MAGS Youth Meetings are held at 7:00 P. M. on the second Friday of every month, year round. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, Tennessee.

MAGS Website: memphisgeology.org

MAGS Show Website: <https://earthwideopen.wixsite.com/rocks>

This is a newsletter for and by the Members of MAGS. An article with a byline was written by a MAGS Member, unless explicitly stated otherwise. An article with no byline was written or compiled by the Editor. Please contribute articles or pictures on any subject of interest to rockhounds. The 20th of the month is the deadline for next month's issue. Send material to lybanon@earthlink.net.

January DMC Field Trip

WHERE: Franklin County, AL

WHEN: Saturday, January 21 3, 10:00 A.M.

COLLECTING: Mississippian marine fossils

CONTACT: Jim Thomas, (205) 516-6436,
jamesethomasrng@gmail.com

Links to Federation News

- ➔ AFMS: www.amfed.org/afms_news.htm
- ➔ SFMS: <https://www.southeastfed.org/>
- ➔ DMC: <https://www.southeastfed.org/sfms-field-trips/dmc-field-trip-program>

January Program produced plain ceramics which were sometimes massive. Some of the pottery also showed the presence of the two Andean cultures—Tiahuanaco and the Inca Empire.

There was a so-called museum in town, under the auspices of the local university, but it was never open. There was a part-time custodian who told me the prize fossil material had been “taken”—his Spanish word could have meant “stolen” or “bought”—by a prominent American museum, and that there was no money to run the

museum.

Much of my time was devoted toward getting that museum up and running. I lobbied the university head for the occasional use of a pickup truck to take high school kids on field trips. And I contacted my college paleontology prof, who sent a geology pick and some reference books.

Though the museum didn’t open during my tenure, it did eventually. It’s well worth a look online. Just Google Tarija Museum and choose the one with Paleontology and Archeology in the name.

Editor’s Note: *The January program will have a greater scope than this article: “Adventures with Rocks & Relics in Memphis and Tarija, Bolivia.”*

Author’s Biography: I was born and raised in Memphis, and have always been interested in rocks and relics. As a child, my interests were fueled by some of the MAGS Members, especially Kenneth L. Beaudoin and Glenn E. Barnes. I studied Paleontology in college, and had a fabulous opportunity to apply that knowledge as a Peace Corps Volunteer in Bolivia, 1964-66.

President’s Message

**MAGS MEMBERSHIP MEETING CHANGES
Moves from Friday night to Saturday day**

Brunch with MAGS

Donuts, Coffee, Rocks

SATURDAY, JANUARY 14, 10:00 AM

**Adult and Junior Programs, Exhibits,
Door Prizes**

Brunch with MAGS

Waffles, Coffee, Rocks

SATURDAY, FEBRUARY 11, 10:00 AM

**Adult and Junior Programs, Exhibits,
Door Prizes**

W. C.

Web Tip

If horror movies have taught us anything, it’s that the dead have this knack for coming back from the grave and showing up again to freak us out. And in a way, the same can be said for some fossil animals.

Natural history is full of things that were long thought to have gone extinct only to show up again, alive and well. Paleontologists have a word for these kinds of organisms: They call them Lazarus taxa.

These taxa get the reputation for being, well, dead because their remains suddenly disappear from the fossil record, making it look like they’ve vanished, even though they’ve stayed around, often for millions of years. But, aside from blowing our minds by re-appearing when we least expect it, Lazarus taxa give us a fascinating lesson in the limits of what the fossil record can really tell us.

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MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ◊ A monthly newsletter for and by the members of MAGS



“Our Fluorescent Mineral Collection” Photos



Article on P. 1

Web Tip

Continued from P. 3

One of the most famous stories of life returning from the depths of time starts over half a billion years ago, in the Cambrian Period, right when life was getting its feet under it.

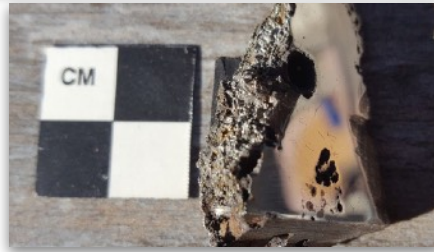
...

Want the rest? Watch the YouTube video, “The Extinction That Never Happened,” <https://www.youtube.com/watch?v=Lhy-Q5z5f-m8>.

Breaking News: New Minerals

Matthew Lybanon, Editor

A 15.2 metric ton meteorite was discovered in Somalia in Somalia in 2020. Chris Herd, curator of the University of Alberta’s meteorite collection, received samples of the space rock so he could classify it. As he was examining it, something unusual caught his eye—some parts of the sample weren’t identifiable by a microscope. He then sought advice from Andrew Locock, head of the university’s Electron Microprobe Laboratory, since Locock has ex-



perience describing new minerals.

“The very first day he did some analyses, Herd said, ‘You’ve got at least two new minerals in there.’” Locock’s quick identification was possible because similar minerals had been synthetically created before, and he was able to match the composition of the newly discovered minerals with their human-made counterparts. The findings were presented in November at the University of Alberta’s Space Exploration Symposium.

One mineral’s name, elaliite, derives from the space object itself, which is called the “El Ali” meteorite since it was found near the town of El Ali in central Somalia. Herd named the second one elkinstantonite after Lindy Elkins-Tanton, vice president of Arizona State University’s Interplanetary Initiative. Elkins-Tanton is also a

regents professor in that university’s School of Earth and Space Exploration and the principal investigator of NASA’s upcoming Psyche mission (which will go to a metal-rich asteroid orbiting between Mars and Jupiter).

The International Mineralogical Association’s approval of the two new minerals in November of this year “indicates that the work is robust,” said Oliver Tschauer, a mineralogist in the department of geoscience at the University of Nevada, Las Vegas.

Both new minerals are phosphates of iron, according to Tschauer. “Phosphates in iron meteorites are secondary products: They form through oxidation of phosphides...which are rare primary components of iron meteorites,” he said via email.

“Hence, the two new phosphates tell us about oxidation processes that occurred in the meteorite material. It remains to be seen if the oxidation occurred in space or on Earth, after the fall, but as far as I know, many of these meteorite phosphates formed in space. In either case, water is probably the

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Breaking News: New Minerals
Continued from P. 4

reactant that caused the oxidation.”

Interested readers can get more information from the University of Alberta’s news release, <https://www.cbc.ca/news/canada/edmonton/alberta-researchers-identify-new-minerals-from-meteorite-found-in-somalia-1.6675305>.



Ice Age *Cervalces scotti* Skull

Juliet E. Morrow

Editor’s Note: Dr. Morrow is Station Archeologist-ASU-Jonesboro. This article (full title: “New discovery of an Ice Age *Cervalces scotti* skull from the Central Mississippi Valley Delta”) has a very extensive list of references. Because the article itself is long, the reference list is not printed in this issue. Readers who would like to view the reference list can request a copy from lybanon@earthlink.net.

An extinct species of cervid or deer, slightly larger than modern day moose (*Alces alces*) and modern elk or wapiti (*Cervus elephas*), occurred far south of the ice sheets during the late Pleistocene. Known commonly as stag-moose or elk-moose, its scientific name is *Cervalces scotti*. This giant deer had the long snout and large palmate antlers of a moose that branched out to multiple tines like the antlers of an elk. *Cervalces* was evolutionarily actually closer to moose than elk. The beam portion of the antlers are found more often than other elements because they are so robust. The most striking attribute of *Cervalces* compared to *Alces alces* happens to be

the lengthy beam that separates the palmations from the skull (Figures 1 and 2) (Churcher and Pinsof 1987). Our modern moose *Alces alces* crossed the Bering land bridge and filled the ecological niche formerly occupied by the extinct stag moose, *Cervalces*. Their ecological niche consisted of wetlands and forests of mixed spruce with lesser amounts of hardwoods. Their vegetarian diet was quite similar to that of mastodons and consisted of aquatic plants during summer and twigs during winter. Distribution maps indicate that mastodons and *Cervalces* co-occur in the fossil record (Faunmap 2000).

There are two early published reports of elk moose from the east, one in the *Transactions of the American Philosophical Society* regarding specimens from Big Bone Lick in Kentucky (Wistar 1818) and another in the *Proceedings of the Academy of Natural Sciences of Philadelphia* based on a specimen from New Jersey that was initially classified as *Cervalces americanus* (Clark 1885). Numerous midwestern bogs in Ohio, Indiana, Illinois, and New York have yielded fossils of *Cervalces* left by retreating glaciers. And they occurred even far-

ther south with isolated fossil remains having been discovered in Virginia, Arkansas, Mississippi, and South Carolina. According to Mark Gelbart, *Cervalces* antler fragments and a jawbone with a tooth were found in Desha and Philips County, Arkansas, and Rosedale, Mississippi, at 34 degrees latitude, however, I was not able to find a published report on these. Another specimen, a single tooth, was reportedly found in Charleston, South Carolina, at 32 degrees latitude. I have yet to verify the Arkansas occurrences. Gelbart reasons South Carolina is probably close to the southern limits of its former range, based on the lack of *Cervalces* from fossil sites in Florida.

Ice age animals were found in abundance this summer and fall, particularly when the Mississippi River reached an Continued, P. 6



Figure 1. The JM *Cervalces* skull with antler beams found in 2022, top, inferior view, middle, superior view, bottom: posterior view.

Figure 2. *Cervalces*, the Ice age stag-moose or elk-moose



Image courtesy of Mark Gelbart

Ice Age Cervalces scotti Skull historic
Continued from P. 5 low.

The ASU Research Station received many phone calls and emails regarding fossils (bones that have turned to rock) and bones other than non-mineralized osseous material and I'll report on more of them in *Field Notes* before we are in the field again.

Sherry Hawkins and Tess Pruett of the Hampson Museum at Wilson, Arkansas, contacted me in November 2022 regarding a discovery of a fossilized skull and antlers. Photographs they sent showed a partial skull and antlers that I identified as *Cervalces*. A man and his family found it while walking on the sand and gravel bars of the Mississippi River during a historically low period this year. They brought it to the museum and I took measurements. This amazing fossil discovery is the third published report of *Cervalces* from Arkansas, the other occurrences are reported in *Field Notes* (Morrow 2011). Technically the sand/gravel bar on which the skull was found may be in Tennessee depending on how the mighty Mississippi has recently meandered. The missing palmate portion and jaw along with the fractured inferior surface of the skull make it likely that the JM specimen washed in from a bone bed somewhere north of where it landed. Through my macroscopic examination I did not observe any cut marks or other clear signature of modification by humans. There did not appear to be any carnivore gnawing or punctures. This extraordinary specimen appears to be mineralized and probably lacks

collagen. If this is the case then using a technique that dates the apatite fraction of the bone may be used to place it into temporal context (Zazzo and Saliège 2011). The youngest known specimen of *Cervalces* south of the ice sheets dates to the Younger Dryas onset at 10,950 +/-150 and 10,800 +/- 45 and was found at the Dewey Parr site, a fossil locality in New York State (Feranec and Kozlowski 2010).

The burr of this newest *Cervalces* specimen, which I have named the JM *Cervalces* after the finder, is similar but extensively eroded in comparison to the one discovered by Lloyd Wade when he was pearl diving in the Black River in 2010 (Morrow 2011). The Wade *Cervalces*, also known as specimen 2010-476, is a shed and consists of only the burr and a portion of the palmate antler; it lacks the skull as well as the antler tines that would have emanated from the top and sides of the palmate portion. Lloyd donated this specimen to the Arkansas Archeological Survey. The maximum circumference of the burr on the Wade *Cervalces* is 21.6 cm. The maximum circumference of the highly eroded burr of the JM specimen's left antler is 20.8 cm and the right is 20.5 cm. This is the same circumference as specimen G-28338 from Ohio (McDonald 1989). The skull height is 13.5 inches, the minimum width is 16 cm and the maximum width is 19 cm. The width from burr to burr is 77 cm and the right antler is 28 cm from the burr to the fractured end. The left antler is 25 cm long from the burr to the fractured end. The condylar width is 10 cm;

these condyles are the articular surfaces for the atlas vertebra which is not present. Length between the condyles and the occipital bone is 25 cm. In modern moose (*A. alces*) the antlers are normally cast in the early winter (December-January) and the new antlers do not start growing until early spring (April-May) (Van Balenberghe 1983). If *Cervalces* had a similar pattern of antler growth, then the JM *Cervalces* died during the fall, prior to December. The well-fused cranial sutures are indicative of a mature animal.

While the debate rages about whether the terminal Ice Age megamammal extinction was caused by climate change or over-hunting, there is plenty of supporting archaeological evidence that humans helped to cause the extinction of numerous large herbivores (like *Cervalces*), at the end of the Pleistocene (Fiedel and Haynes 2004). Humans from Asia colonized Alaska some 14,700 years ago while ice sheets covered most of Canada. The ice sheets would have restricted *Cervalces* to more temperate regions where humans eventually became common enough to impact their populations. When the glaciers began to recede, stag-moose habitat niche increased, but humans had already helped push megafaunal species, including mammoth, horse, camel, and paleollama to extinction. Although no *Cervalces* specimens have yet been associated with humans, radiocarbon determinations indicate that they date to slightly earlier than the last glacial maximum, circa 28,000 years ago and co-occurred with hu-

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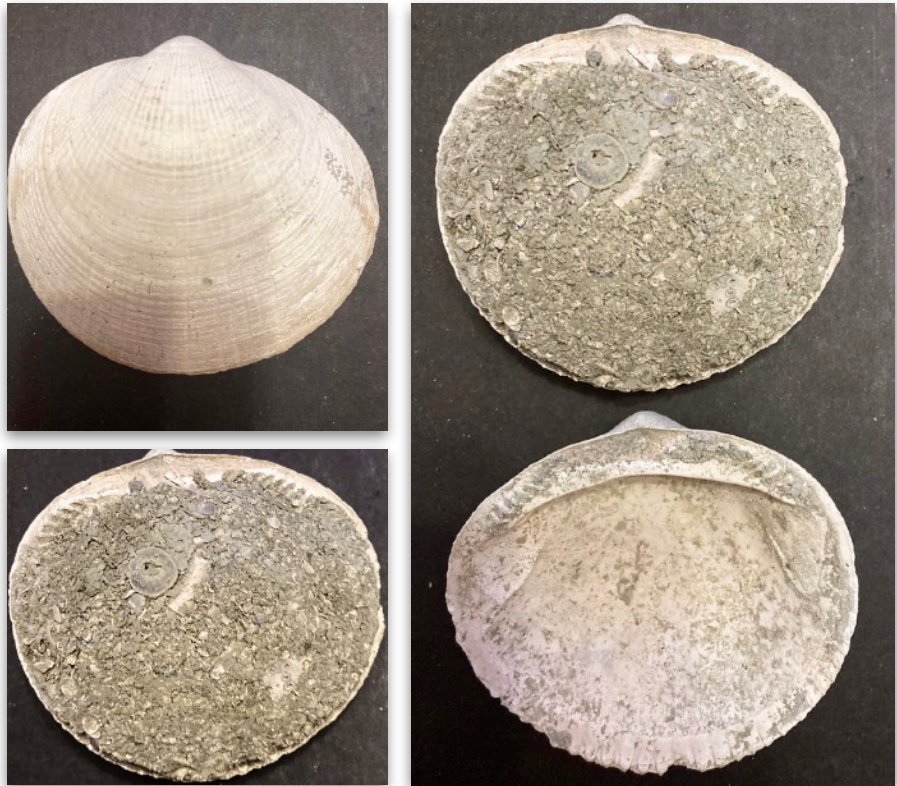
Ice Age Cervalces scotti Skull
Continued from P. 6

mans in the Mid-west and northeastern US during the terminal Pleistocene (Becker et al. 2010, Boulanger and Lattanzi 2018, Glotholber and McDonald 2015, Schubert et al. 2004).

Revealed—30 Million Years Later Plus 5 Years

W.C. McDaniel

This fossil clam—most likely from Morocco—was part of a collection I purchased several years ago. For many years it stayed intact in a display box as one piece, rarely picked up. Last week, as I picked it up, the top part separated, exposing the inside—I suppose after millions of years. I am glad that separation occurred. The bottom part was cemented together with fossils, fossil parts, and other mysteries. Will seal the bottom and leave it open for display.



MAGS 2022 Holiday Party



Photo Credits:
Bob Cooper
Matthew Lybanon



Fabulous Tennessee Fossils

Dr. Michael A. Gibson,
University of Tennessee at Martin

FTF 95

R. Lee Collins—UT Knoxville Paleontologist



Robert E. Lee Collins, more generally known as R. Lee Collins, was born October 22, 1898, in Trappe, Maryland, and died in Knoxville on April 22, 1952, according to a 1952 Geological Society of America memorial. The memorial goes on to say that his death was unexpected (more on that below) and that he was survived by his widow Mrs. Beth Chaney Collins.

Most GSA memorials run a couple of pages long; however, R. Lee Collins' memorial was a mere couple of sentences and finding any information on Collins has been a real challenge (one that I am yet not entirely done with). I chose to write about Collins in this essay because of a serendipitous occurrence that I had this past month. I was visiting MAGSter Ron Brister just before Christmas to pick up books and papers from his personal library that he is donating to the University and to Coon Creek Science Center. While going through some of the papers, I came across a 1950 issue of *Nature Magazine* which featured a photo of Collins (Figure 1) with the article author David Dickey. This was the first photograph of Collins that I have been able to find. At this point I am not able to provide a complete background history for Collins

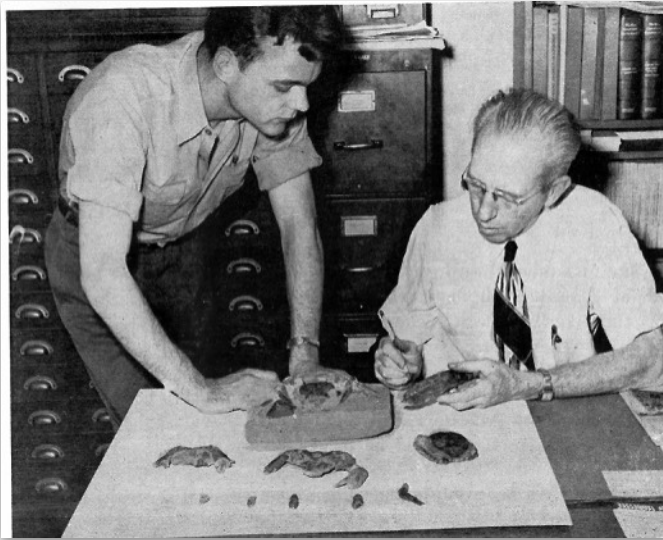


Figure 1. Photograph of David Dixon (standing) and paleontologist R. Lee Collins (seated) from a 1950 article about the Coon Creek formation in *Nature Magazine*.

like I would normally write, but I can recount the stories about him that I heard while a graduate student at UT Knoxville in the early 1980s. Collins was a vertebrate paleontologist during the 1940s and 1950s at UTK. At the time of his death in April of 1952 he was working on several projects, including a study of bird fossils discovered on the "George Farm" in Cannon County, Tennessee, that he never completed. As the story was related to me, Collins died that night in his office working. This office was the same office in the G&G Building on the UTK campus that would later be occupied by Collins' successor (paleobotanist R.E. McLaughlin) and my advisor (paleobiologist Thomas Broadhead) and in which I would

spend many months working during my dissertation studies.

There are two notable events related to Collins that I want to share in this article. First, I am sure you are all aware of how the first dinosaur bones to be identified from Tennessee were discovered, or perhaps better, rediscovered. If not, let me recap. Collins' research focus in the 1940s and early 1950s primarily dealt with Pleistocene vertebrates; however, he was also dabbling in Cretaceous vertebrates being

found in West Tennessee. Collins had been studying the Tertiary (now Paleogene and Neogene) stratigraphy of West Tennessee since the 1920's and had coauthored a summary of the stratigraphy in 1926 ("The Tertiary of West Tennessee") with the great southeastern U.S. stratigrapher Joseph K. Robert. In a 1951 paper in the *Journal of the Tennessee Academy of Science*, he described a new species of turtle that he named after Dave Weeks, *Toxochelys weeksi*.

Also in Collins' office at the time of his passing was a box containing several vertebrate remains that ultimately ended-up with a paper label in the storage box identifying the

Continued, P. 9

Fabulous Tennessee Fossils bones as part of a “mastodon?, West Tennessee” and a tag that said “Cretaceous West Tennessee”. These bones, along with a large collection of other fossils that had been put into storage upon Collins’ passing (including the skull of a lion that had died in the National Zoo in Washington, D.C.) had been recently put out for us to go through and sort for restorage or discarding from the UTK paleontology labs. Fortunately, during the evaluation, several of us questioned the tag identifying the bones as mastodon and one student, Jon Bryan, suggested they looked dinosaurian. I finished-up my degree at this time and soon left for UTM, but Bryan and another student, Dan Frederick (now at Austin Peay State University), sent the bones to David Schwimmer at Columbus College, who knew dinosaurs, for evaluation and they turned out to be five hadrosaur bones and a few odd marine reptile bones. This became the first skeletal material of a dinosaur from Tennessee. I am sure that Collins would have identified the material as hadrosaur had he not passed away and the bones put into storage. I also suspect that whoever boxed his material figured that since the bones were large and that mastodons were common occurrences that there was a pretty good chance that the bones were mastodon, hence the mastodon “?” on the label. There is more to the mystery of these hadrosaur bones than I have shared here, but the trail remains murky at this point. It is my intention to dig into the UTK papers more to look for answers and of

course to find out more about other past paleontologists from Tennessee. I will provide more on R. Lee Collins soon I hope!



Adult Programs

Note **date changes** for January and February. Both meetings start at 10:00 A.M. on Saturday.

January 14: James Kee, “Adventures with Rocks & Relics in Memphis and Tarija, Bolivia.”

February 11: Nina Riding, “An Overview of six Oligocene palynological samples from southern Mississippi.”

March 10: TBD.

Junior Programs

January 14: “Comparing modern ecosystems to those in the past.” Continues the Plant Fossil Activities from a previous meeting.

February & March: TBD.

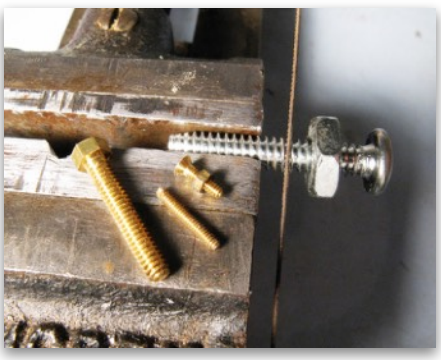
January Birthdays

- 2 Justin Coulson
- 3 John Clower
- 10 Noa Parks
- 13 Khloe Webster
- 16 Mitch Mitchell
- 18 Ricky Waters
- 21 Brooke Ledbetter
- Richard Gunter
- 24 Dr. Jon Stanford

- 26 Amber Gonzalez
- 31 Teresa Noyes
- Sherri Jones

Jewelry Bench Tips by Brad Smith

CUTTING A BOLT



Whenever you have to cut a threaded bolt shorter, it's often difficult to get the nut to thread back onto it. And the smaller the bolt, the more difficult it is to restore any distorted threads. The problem is easily solved with the use of a nut. Here's how I do it.

First, screw a nut onto the bolt before cutting it. Grip the bolt by the threaded section that is to be sawed off. Then saw the bolt to the desired length, taper the end with sandpaper or file, and unscrew the nut from the bolt.

Unscrewing the nut over the freshly cut end of the bolt will straighten out any damage that sawing and filing did to the threads. Gripping the bolt by the piece to be sawed off localizes any crushing damage to the piece that will be thrown away.

DEPTH GAUGE FOR DRILLING

Sometimes you need to drill a number of holes all to the same depth. One quick *Continued, P. 10*

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Jewelry Bench Tips and easy way to
Continued from P. 9 do this is to
wind some tape
around the drill bit so that the
tape just touches the part surface
when the hole is deep enough.



You can set the depth either
by measuring from the tip of the
drill to the tape or by drilling to
the correct depth, leaving the bit
in the hole, and wrapping tape
around the bit at the surface level.

Note that a little extra tape
left free on the end will blow away
debris from the drilling.

Smart Solutions for Your
Jewelry Making Problems

[amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)

November Board Minutes

Mike Coulson

Zoom meeting called to order 6:30.
Present: W.C. McDaniel, Carol Lybanon, Matthew Lybanon, Bonnie & Bob Cooper, Mike Coulson, Mike Baldwin, Nannett McDougal-Dukes, Melissa Koontz, Dave Clarke, Jim Butchko, Kathy Baker.

New Business:

- Voted on changes to bylaws. All changes were approved.
- Change Article III, Section I, paragraph A, as follows:
 - The Board will revisit this item or will leave as is. Regular Membership Meetings which shall be held on the second Friday night of each

month or at time determined. **by the board and communicated to members.**

- Plans for upcoming Holiday party were discussed. Two options:
 - **Option 1:** Food brought in from vendor (pizza or something) purchased by the club, holiday gifts will be passed out, there will be games with prizes for Members to play. We'll eat together.
 - **Option 2:** Buffet meal with dishes brought in by Members and ham and/or turkey provided by the club. Holiday gifts will be passed out, there will be games with prizes for Members to play. We'll eat together.
 - **Follow-up:** After discussion, W.C. proposed sending out an email for Members to vote on which party format they would like to see. Email sent; the vote in favor of option 2 was overwhelming.

Show: 2023 Show will be held at the Agricenter. Final plans are being discussed. Jim Butchko appointed Show Chair for 2023. Eleven dealer contracts are in and seven or eight have sent in their check.

Treasurer: Report presented to Board and approved. Newsletter printed and mailed out.

Membership: No new Members. 15 Members have renewed.

Secretary: Minutes submitted via email, presented to Board and approved.

Adult Programs: November 11: Alan Parks, Memphis Stone and Gravel, gravel mining. December 9: Holiday Party.

Field Trips: Eight to ten people went to Richardson's Landing last month, finding agates and fossils. November 12: Memphis Stone and Gravel, specific location TBA. No field trip in December.

Youth Programs: November 11:

Plant/Fossil activity. December 9: Combined Youth and Adult Holiday Party.

Editor: November newsletter completed and out. Deadline to submit content for the newsletter is the 20th of the month.

Web: Website is updated. Still having issues uploading content. Mike would like to use another interface that would be more user friendly and could be updated easily. Bonnie will talk to and possibly solicit help from him on building the site.

Old Business: None.

Adjourned 7:10.

November Meeting Minutes

Mike Coulson

Alan Parks, Memphis Stone & Gravel, spoke on gravel mining. The club will visit the MS&G site the following day.

Water From Space?

Matthew Lybanon, Editor



Water covers $\frac{3}{4}$ of the Earth's surface and was crucial for the emergence of life, but scientists have had a hard time understanding its origin. A 4.6 billion-year-old rock that crashed on to a driveway in Gloucestershire, U.K., in 2021 has provided some of the most compelling evidence to date that water arrived on Earth from asteroids in the outer solar system.

A prevailing theory is that the Earth was barren *Continued, P. 11*

Water From Space? when it formed, as the inner region of the solar system was too hot for water to condense. Scientists think that water could have arrived to Earth later, raining down in icy meteoroids and large impacts.

However, there are competing theories, including that water was brought on comets or other similar bodies. The latest analysis adds weight to the theory that asteroids made a leading contribution to water on Earth.

Most of the so-called Winchcombe meteorite was recovered just hours after its spectacular fireball lit up the skies over the U.K. in February 2021 during lockdown. The incoming meteorite was also recorded by 16 dedicated meteor cameras, and numerous doorbell and dashcam videos, meaning that scientists could produce an accurate trajectory of where it came from in the solar system.

The analysis, published in the journal *Science Advances*, concludes that the meteorite originated from an asteroid body somewhere near Jupiter. The research also found that the ratio of hydrogen isotopes in the water closely resembled the composition of water on Earth.

“Meteorites like Winchcombe are a pretty good match [to] the water in the Earth’s oceans and suggests asteroids were the main source of water,” said Dr Ashley King, a research fellow at the Natural History Museum in London and author of a new paper on the space rock.

Ref: King, Daly et al. (2022) *The Winchcombe meteorite, a unique and pristine witness from the outer Solar System, Science Advances*
DOI:10.1126/sciadv.abq3925.

Ice-Age Fossils In Mississippi

Matthew Lybanon, Editor



Recently exposed sandbars along the drought-stricken Mississippi River have caught the attention of fossil hunters. Oxford, Mississippi, resident Wiley Prewitt was exploring a newly exposed area on October 26 when he came across a rather large tooth poking out of the sand. He would soon learn he had found a fossil jawbone from a giant American lion, a species that has been extinct for roughly 11,000 years.

“I knew immediately just by the shape of the teeth that it was a carnivore fossil, but of course, I did not know that it was (an American) lion. We all know about those, but you never dream that you’re going to find one,” Prewitt said. “I just couldn’t believe it. It was hitting the fossil lottery.

The American lion was the largest extinct cat to live in North America during the last ice age. Known by its scientific name, *Panthera atrox*, meaning “fearsome panther,” the species was 25% larger than a present-day African lion, standing at 4 feet tall at the

shoulders and measuring 5 to 8 feet in length. American lions weighed between 500 to 800 pounds on average, although some of the biggest may have topped 1,000 pounds.

Three days after Prewitt’s find, the Mississippi Fossil and Artifact Symposium & Exhibition hosted an event featuring previously discovered American lion fossils. Prewitt took the fossil in the hope of having experts identify it.

When (Prewitt) whipped out that anterior portion of a lion jaw, I knew right away what it was,” said George Phillips, curator of paleontology at the Mississippi Museum of Natural Science. “Who would have thought in a million years that another lion fossil would show up, considering that they’re rare, at an event (in) which the theme was the American lion?”

While the fossil was not a complete jawbone, plenty was left to identify the specimen easily, Phillips said. It had a significant gap between the canine and the premolars that could only belong to the American lion. After observing other fossils from the same species at the event, Phillips said it was easy to narrow down the other carnivore possibilities and confirm that he was looking at another fossil from the lion.

One week after that surprising discovery, a local wildlife officer pulled a large American lion femur from the river’s sediment, resulting in another fossil from the same scarce species being added to the museum’s collection.



MAGS At A Glance

January 2023

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 	2	3	4	5 Zoom Board Meeting, 6:30 pm	6	7
8	9	10	11	12	13 NOTE DATE CHANGE ---->	14 Membership Meeting: James Kee, "Rocks & Relics ...," 10:00 am
15	16 	17	18	19	20	21 DMC Field Trip, Franklin County, AL
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Memphis Archaeological and Geological Society
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